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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/912,112 | 07/23/2001 | Tetsuya Ishikawa | AMAT/1570.C2/DD/HDP/CVD/J | 4580 |
| 32588 | 7590 | 05/28/2004 | EXAMINER | |
| APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050 | | | ZERVIGON, RUDY | |
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1763

DATE MAILED: 05/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,112

Applicant(s)

ISHIKAWA ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-31 is/are rejected.
- 7) ☒ Claim(s) 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/17/2001.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Claim Objections***

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 32 is renumbered claim 31.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show 34 (chamber lid assembly) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “98” has been used to designate both “substrate receiving portion” (specification) and “substrate receiving member” (claims). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "base member" must be shown or the feature canceled from the claims. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 15-31 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 6,286,451. Although the conflicting claims are not identical, they are not patentably distinct from each other because the presently claimed invention requires an "electrically symmetric" processing enclosure, while the claims of U.S. Patent No. 6,286,451 teaches a processing enclosure, or "chamber".

It would have been obvious to one of ordinary skill in the art at the time the invention was made to construct the chamber of U.S. Patent No. 6,286,451 from "electrically symmetric" material.

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Motivation to construct the chamber of U.S. Patent No. 6,286,451 from “electrically symmetric” material is for providing isotropic electrical characteristics during plasma processing.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 15-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicant claims an “electrically symmetric” processing enclosure. The specification is incomplete in the description of Applicant’s term.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 15-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. The term “electrically symmetric” in claim 15 is a relative term which renders the claim indefinite. The term “electrically symmetric” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Applicant’s “electrically

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symmetric” quality / material attribute is a material attribute with respect to what property of electricity? Continuity? Resistivity? Impedence??....etc...

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 15-31 are rejected under 35 U.S.C. 102(e) as being anticipated by van Os, Ron et al. (US 5,792,272 A). van Os teaches an “electrically symmetric” processing enclosure, comprising; a chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) defining an annular interior processing region (18; Figure 2; column 3, lines 30-56), the annular processing region (18; Figure 2; column 3, lines 30-56) tapering (portion 17, ; Figure 2; column 3, lines 30-56) towards a lower end (portion 16, ; Figure 2; column 3, lines 30-56); an exhaust passage (25; Figure 6; column 10, lines 1-12) concentrically positioned in the lower end (portion 16, ; Figure 2; column 3, lines 30-56) of the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56); a cantilever mounted (21; Figure 2; column 8, lines 8-34) annular substrate support member (20; Figure 6; column 10, lines 1-12) affixed to the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) at a position above and concentric to the exhaust passage (25; Figure 6; column 10, lines 1-12); and a lid member (15; Figure 3A; column 5, lines 33-46) disposed over an annular open top portion (15; Figure 2) (11,12; Figure 2,6) of the chamber body (10, 11, 15-

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17, 19, ; Figure 2; column 3, lines 30-56); the lid member (15; Figure 3A; column 5, lines 33-46) having an energy transmitting dome (27; Figure 2), energy delivery assembly (13; Figure 2; column 5, lines 16-32), and a temperature control assembly (column 6, lines 11-26) mounted thereto, as claimed by claim 15.

van Os further teaches:

- i. The processing enclosure of claim 15, wherein the cantilevered mounted (21; Figure 2; column 8, lines 8-34) substrate support member (20; Figure 6; column 10, lines 1-12) comprises: a base member (part between 21 and 29; Figure 2) having a flange (29; Figure 2) extending therefrom, the flange (29; Figure 2) being configured to attach to an interior surface of the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) and form a smooth surface therewith (see 29/16 interface); at least one cantilevered arm (21; Figure 2; column 8, lines 8-34) portion extending radially inward from the base member (part between 21 and 29; Figure 2); and a substrate receiving member (20; Figure 2; column 8, lines 8-34) mounted to a distal end of the at least one cantilevered arm (21; Figure 2; column 8, lines 8-34) portion, the substrate receiving member (20; Figure 2; column 8, lines 8-34) having an annular outer surface, as claimed by claim 16
- ii. The processing enclosure of claim 16, wherein the annular outer surface defines an annular passage between the outer surface and the annular interior processing region (18; Figure 2; column 3, lines 30-56), as claimed by claim 17
- iii. The processing enclosure of claim 16, wherein the at least one cantilevered arm (21; Figure 2; column 8, lines 8-34) portion includes a substantially hollow interior (72, 73;

Figure 5B; column 9, lines 41-55) portion configured to transmit fluids there through, as claimed by claim 18

- iv. The processing enclosure of claim 15, wherein the energy transmitting dome (27; Figure 2) comprises an cylindrical sidewall (27; Figure 2) that is closed at a first end by a flat top (15; Figure 2), wherein the cylindrical sidewall (27; Figure 2) is generally perpendicular to an upper surface of the substrate receiving member (20; Figure 2; column 8, lines 8-34) and the flat top (15; Figure 2) is generally parallel to the upper surface, as claimed by claim 19
- v. The processing enclosure of claim 19, wherein a junction between the cylindrical sidewall (27; Figure 2) and the flat top (15; Figure 2) is rounded (see flanged portion 41 attached to 12; Figure 3a) to provide a curvilinear inner wall of the energy transmitting dome, as claimed by claim 20
- vi. The processing enclosure of claim 17, wherein the exhaust passage (25; Figure 6; column 10, lines 1-12) is concentrically positioned below the annular passage between the outer surface and the annular interior processing region (18; Figure 2; column 3, lines 30-56) and provides even gas flow through the annular passage (column 10, lines 1-13), as claimed by claim 21
- vii. The processing enclosure of claim 15, wherein the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) includes at least one entry port (29; Figure 7) formed therein, the cantilever mounted (21; Figure 2; column 8, lines 8-34) substrate support member (20; Figure 6; column 10, lines 1-12) accessing the annular interior processing

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region (18; Figure 2; column 3, lines 30-56) via the at least one entry port (29; Figure 7), as claimed by claim 22

- viii. 23. An apparatus for processing substrates, comprising: a chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) having an annular inner sidewall (27; Figure 2; column 8, lines 8-34) portion and a bottom portion (25/26; Figure 6); a pumping aperture (25; Figure 6) positioned in a central location in the bottom portion (25/26; Figure 6), the pumping aperture (25; Figure 6) being in fluid communication with a vacuum pump (26; Figure 6); an annular substrate support member (20; Figure 6; column 10, lines 1-12) cantilever mounted (21; Figure 2; column 8, lines 8-34) to the sidewall portion, an outer perimeter of the annular substrate support member (20; Figure 6; column 10, lines 1-12) having a radius that is smaller than a radius of the annular sidewall portion; and a lid member (15; Figure 3A; column 5, lines 33-46) configured to close an open top portion (15; Figure 2) (11,12; Figure 2,6) of the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56), the lid member (15; Figure 3A; column 5, lines 33-46) including a dome (27; Figure 2) shaped upper portion configured to transmit energy (13; Figure 2; column 5, lines 16-32) there through, as claimed by claim 23
- ix. The apparatus of claim 23, wherein the lid member (15; Figure 3A; column 5, lines 33-46) further comprises an energy delivery assembly (13; Figure 2; column 5, lines 16-32) and a temperature control assembly (column 6, lines 11-26) mounted thereto, as claimed by claim 24
- x. The apparatus of claim 23, wherein the outer perimeter of the annular substrate support member (20; Figure 6; column 10, lines 1-12) and the annular inner sidewall (27; Figure

- 2; column 8, lines 8-34) cooperatively form an annularly shaped aperture (25; Figure 6) there between, as claimed by claim 25
- xi. The apparatus of claim 23, wherein the pumping aperture (25; Figure 6) is concentrically positioned below the annular substrate support member (20; Figure 6; column 10, lines 1-12), as claimed by claim 26
- xii. The apparatus of claim 23, wherein the substrate support member (20; Figure 6; column 10, lines 1-12) comprises: a base member (part between 21 and 29; Figure 2) having a flange (29; Figure 2) extending therefrom, the flange (29; Figure 2) being configured to attach to an interior surface of the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) and form a smooth surface therewith; at least one cantilevered arm (21; Figure 2; column 8, lines 8-34) extending radially inward toward a central location in the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) from the base member (part between 21 and 29; Figure 2); and a disk shaped substrate receiving member (20; Figure 2; column 8, lines 8-34) affixed to a distal end of the at least one cantilevered arm (21; Figure 2; column 8, lines 8-34) portion, the substrate receiving member (20; Figure 2; column 8, lines 8-34) having an annular perimeter and a substantially planar upper substrate support surface, as claimed by claim 27
- xiii. 28. The apparatus of claim 23, wherein the dome (27; Figure 2) shaped upper portion comprises a cylindrical sidewall (27; Figure 2) connecting to a top portion (15; Figure 2) at a first end, wherein the cylindrical sidewall (27; Figure 2) is perpendicular to an upper surface of the substrate support member (20; Figure 6; column 10, lines 1-12), as claimed by claim 28

- xiv. The apparatus of claim 23, wherein the energy delivery system comprises at least one coil (13; Figure 2; column 3, lines 30-56) positioned proximate the dome (27; Figure 2) shaped upper portion, as claimed by claim 29
- xv. The apparatus of claim 23, wherein the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) includes a first entry port (29; Figure 7) formed therein, the first entry port (29; Figure 7) being configured to receive the cantilever mounted (21; Figure 2; column 8, lines 8-34) substrate support member (20; Figure 6; column 10, lines 1-12) there through, as claimed by claim 30
- xvi. The apparatus of claim 30, wherein the cantilever mounted (21; Figure 2; column 8, lines 8-34) substrate support member (20; Figure 6; column 10, lines 1-12) attaches to the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) in a manner that maintains a smooth arc, as claimed by claim 31 - When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Conclusion

- 14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6375750 B1; US 6170428 B1; US 6083344 A; US 6077357 A; US 5994662 A; US 5767628 A; US 5614055 A; US 5522937 A; US 5767628 A; EP 712447 B
- 15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from

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8am through 7pm. The official after fax phone number for the 1763 art unit is (703) 872-9306.

Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (571) 272-1439.

A handwritten signature in black ink, appearing to read "Gregory L. Mills", with a date "5/24/14" written below it.